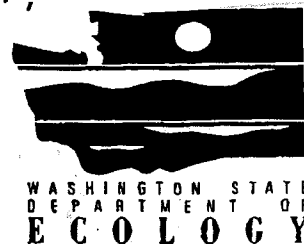


Supplemental Feasibility Study, Whatcom Waterway & Supplemental Environmental Impact Statement, Bellingham Bay Comprehensive Strategy



Comment Form

This is an invitation for comments on the following documents: *Draft Supplemental Feasibility Study* for the Whatcom Waterway Site and *Draft Supplemental Environmental Impact Statement* for the Bellingham Bay Comprehensive Strategy. Please send your comments by April 24, 2002 (address on reverse).

Name and address optional

Name.. Albert J. Hanners Albert J. Hanners
Address... 3807 167th Ave. Dr.
City... Bellingham Zip Code 98225
E-mail Address.....

1. The documents are designed to evaluate the feasibility and potential adverse environmental impacts of a new sediment remediation alternative for the Whatcom Waterway site. Do you have any comments about whether the evaluation performed in these documents is accurate and/or complete? If so, please describe.

1 mf Mercury must be methylated in order to enter fish and human bodies. Would moving mercury and organic matter from the Whatcom Waterway, to a higher, warmer place in the bay, expedite the rate of creating and releasing methyl-mercury? Would the current plan for the GP lagoon create a humongous generator of methyl-mercury? That was not specifically discussed at the meeting on 3/21/02, but "expert" testimony in response to questioning leads to that conclusion.

2 mf The lagoon as a dump site for sediments contaminated with mercury from the Whatcom Waterway would have all the conditions necessary for generating an enormous quantity of methylmercury and passing it into the air. Twenty-one acres would be used as a dumpsite; that's huge! It is 32 feet deep and the bottom 4 feet contain mercury-contaminated sediments accumulated since the lagoon went into service in 1979. The water level is 4 feet above the mean upper tide level; that's high, much higher than where the newly dumped sediments were before being dumped there.

My concern is that at least the upper part of sediments in the dump would be at seasonally warm temperatures and at temperatures higher than before being dredged. The water would be anaerobic; the sediments would contain mercury and organic matter at temperatures where anaerobic bacteria are well known to create methylmercury. It would be passed into the air and into living organisms including ourselves. Would not the plan increase the health problem caused by mercury in the Bay?

3 mf "Expert" testimony was given at the same meeting that Bellingham Bay has "healed itself" by covering mercury contaminated sediments including those in the Whatcom Waterway with up to 6 feet of sterile sediments. Why does the Whatcom Waterway need to be dredged when it will never be deep enough for large ships, and as industries that could have used the waterway already have left the city?

(over)

Continental Plate Edge, Subduction, and Tsunamis

I am concerned that danger from a tsunami had not been considered at the Ecology meeting 3/20/02.

4

In detail, smaller pieces of the Pacific plate dive under the North American continent from California to Vancouver Island. The piece diving under us is called the Juan de Fuca plate, and the zone where it dives is called a subduction zone. The edge of the North American plate where the Juan de Fuca plate begins to dive is offshore. Hence, when there is movement between the two plates, a submarine earthquake results. Geological evidence indicates that the two plates remain stuck together for a time, and then move generating a great submarine earthquake and a tsunami.

EMA The term tsunami is of Japanese origin and began to be introduced to American English about the middle of the 20th century after the distinction between wind-generated waves and those caused by submarine earthquakes became better understood. Tsunamis steepen and increase in height as they enter shallow water. Waves on the order of 30 feet high are common; waves 60 feet high have been recorded.

David Engebretson, professor of geology at Western Washington, warned in a Herald article on 11/7/89 that, "It is almost certain that a great earthquake – on the magnitude of 8.0 or more – will occur in this region". He added that, "Great earthquakes occurred in this region 300, 1000, 1600, 1700, 1700, 3100 and 3400 years ago . . . As it has been 300 years since the last earthquake, we are due another anytime". Science News in 2/27/90 said that Brian Bower, of the U.S. Geological Survey, had found evidence of several tsunamis in coastal sediments of this region.

Response to Mr. Albert J. Hanners

- 1) Based upon anticipated site conditions, generation of large amounts of methyl and di-methyl mercury (organo-mercury) are not predicted. This is because the vast majority of the mercury will not be chemically available for bacteria to convert it to organo-mercury. This is due mainly to two conditions expected to exist simultaneously: a) anoxic (low /no-oxygen) conditions and b) high sulfide content (found in Bellingham Bay marine sediments). Although methyl and di-methyl mercury formation is indeed normally expedited under anoxic conditions, the presence of sulfides within the anaerobic environment binds the vast majority of mercury. This renders the mercury virtually unavailable for anaerobic bacteria to transform it into methyl or di-methyl mercury. The presence of chloride ions (Cl-) from the sea salt (NaCl) also reduces the availability of mercury for transformation to organo-mercury. Warmer (upland) site conditions should not affect the binding effects of the sulfides. Also see response #5 to (Johnson and Tolchin).
- 2) See response #7 to (Johnson and Tolchin).
- 3) The most recent data from the site shows exceedences of state standards of mercury for human health and marine organisms. Also see response #3 (Johnson and Tolchin).
- 4) Comment noted. See response #2 (Williams) and #9 (Johnson and Tolchin).



Nooksack Indian Tribe Natural Resources Department

3891 Uluquance Drive • P. O. Box 157 • Deming, WA 98244
(360) 592-2632 • Fax (360) 592-5753

April 24, 2001

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BELLINGHAM FIELD OFFICE

Department of Ecology
Attn. Lucy McInerney
3190 160th Ave. SE
Bellevue, WA 98008-5452

RE: Comments on the supplemental EIS

Dear Lucy:

1 Nearly all of the comments that were delivered to Christine Corrigan on or about September 21, 1999 concerning the first EIS are still not addressed in the supplemental EIS. Specifically we need to get binding agreements for the various commitments. "The ability of the pilot staff to quantify the benefits and risks appear in part limited by deficiencies in the current data sets and studies" is still accurate because the biological characteristics and the use and impact to of listed Chinook, bull trout and other treaty resources are still unknown. The quantification of the benefits for bull trout and Chinook salmon that the near term alternatives should provide has not occurred.

2 The concept of hydraulic dredging in the Whatcom Waterway and reducing the number of times that dredge spoils need to be handled is timely. The use of the dredge will most likely reduce the needs for other measures to reduce the impacts of short term water quality departures. The potential entrainment of organisms is an undocumented concern and does not appear to be discussed in the text. Additionally the amount of water that is necessary for a dredge to operate and transport the material to the ASB may alter the standing crop of planktonic organisms that are present in the waterway. Another issue is the capacity of the ASB and the water return system adequate to insure that the filtered water that is returned is free of contaminants? Do mobile organisms like Dungeness Crab have any problems avoiding being dredged?

3 Habitat disturbance is of concern in that production of benthic and epibenthic organisms
4 may not return to reasonable levels for several years; this may not be acceptable to listed
5 species if all the work was accomplished at one time. Sequencing may be a real need for forage production in the area and should be investigated. The salmon migration enhancement corridors need further investigation because the effectiveness has not been well documented and the substrate configuration may be the determining factor. While it is conceptually a good idea to recreate the habitat elevations that were lost with the near shore fills like construction of the marina and the ASB it is equally important to realize that this historic habitat was a large eelgrass meadow (+200 acres). It might be necessary to construct the enhancement corridors prior to the dredging activities so that the whole area is not in the initial stages of recovery from disturbance.

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6

In table 2 of the SEIS the magnitude of the fish habitat improvement is clearly much larger in the preferred alt. (35 acres) verses the modified alt. (6acres). The adequacy of this amount as mitigation has not been evaluated, and needs to be.

On page 8 of the supplemental EIS some one thinks that minimizing eelgrass impacts is a form of mitigation; this is not correct. It simply reduces the amount that need to be mitigated for.

7

The short term disruption to tribal fishing can not be evaluated without the operational windows that the proponents choose to use. The SEIS indicates a 2-5 month dredge window which would preclude some tribal fishing. The months need to be stated so impacts can be evaluated

8

The proposed Restricted Navigational Areas (RNA) will cause tribal fishers to move their operations to other areas. In fact some who want to fish in protected areas may stop fishing altogether. The truncation of this reserved right is unacceptable and needs to be minimized. The loss of fishing area and opportunity needs extensive investigation to determine its necessity. It appears that nearly 60 acres are involved and given the amount of encroachment that has already occurred it may be time to remove some of the near shore fills.

Thank you for the opportunity to comment again.

Sincerely,


Robert Kelly

Director of Nooksack Natural Resources

Response to Mr. Robert Kelly (Nooksack Natural Resources)

- 1) While inclusion of supplemental site information may be beneficial, expenditures of additional resources and/or time does not appear justified at this stage. Ecology believes sufficient data exist with which to make adequate assessments of the habitat enhancement benefits/risks. It should be noted, however, that the Bellingham Bay Habitat committee is currently establishing recommendations for a future baseline habitat assessment as well as a habitat monitoring program
- 2) Comment noted. Relative to the volume of water within the Whatcom Waterway, the volume utilized for dredging is minor. In addition, waterway recruitment of phyto and zooplankton biomass is anticipated within days of dredging completion.
- 3) The ASB and water returned to the Bay will need to comply with the NPDES permit issued to Georgia Pacific.
- 4) Loss of biomass due to the potential entrapment of mobile species is expected to be minimal, but will be evaluated for hydraulic dredging activities.
- 5) The feasibility and practicality of dredge sequencing will be evaluated and/or discussed in the **cleanup action plan**. Comment noted.
- 6) It is not clear from the comment what is meant by “adequacy” of this amount of mitigation. Comment noted.
- 7) Comment noted.
- 8) Comment noted.

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BELLINGHAM FIELD OFFICE**

23 April, 2002

Lucy McInerney, P.E.
Washington Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008

Dear Ms McInerney:

I have reviewed the Bellingham Bay Comprehensive Strategy Draft Supplemental Environmental Impact Statement and Supplemental Draft Feasibility Study and offer the following comments:

To start, I would like to commend Georgia Pacific and the Pilot Team for re-thinking disposal options and offering up a creative new alternative for consideration. As well, I am pleased that out-of-water disposal is now being taken seriously. We have long maintained that if dredging was to occur in the bay, then the contaminated material should be removed from our bay, rather than leaving it in an aquatic environment, with the inherent uncertainties that this environment offers. As well, we are pleased to see that Georgia Pacific is willing to take responsibility for its pollutants and that the Pilot Team is no longer looking to transfer liability for these contaminants from the private corporation that discharged them to the public.

We are also pleased that the use of hydraulic dredges is being considered. The use of this technology should substantially reduce the risk of re-suspension of contaminants during dredge operations. The SEIS provides a rather thorough discussion of the merits of various dredge options and seems to choose hydraulic dredging as the best option in this circumstance. While the SEIS states that the new preferred alternative would make the use of this technology possible, I do not recall any commitment being made to the use of this technology. We would like to encourage the Department of Ecology to commit to the use of hydraulic dredging in this project.

As with the original Environmental Impact Statement, we do have some concerns that this SEIS is not assessing a clearly presented project and that too much detail has been left to a later date.

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3 As with the previous environmental review, there are many questions that arise upon reading this document as many important issues have been left until the engineering phase of the project. I am leery of project proponents who answer questions with the statement: "we'll develop that during engineering." One small example appears in Table 2, the Summary of Integrated Near-Term Remedial Action Alternatives. The discussion of the GP ASB under the Modified Preferred Remedial Action Alternative is presented as: "Cap/Habitat Corridor(?)." What do these question marks mean? Is the proponent unsure as to whether a habitat corridor will be designed into this site? If there are outstanding questions about such a corridor, they should have been answered in this SEIS, as that is what EIS documents are for.

4 This lack of information is especially pertinent to the discussion of the ASB disposal facility and its design. On page 29 of the Supplemental Feasibility Study, there is a small amount of discussion of how the facility would be designed. As seems to be the case throughout these documents, the entire one paragraph discussion ends with the statement: "Details of the ASB facility would be developed during remedial design." This study and the SEIS were ostensibly developed to discuss the details and impacts of this very option and yet all of the important information about the alternative and its design has been left to a later date. This is a serious flaw and may prove these documents inadequate under SEPA.

Methylation

5 Our primary concern with ASB disposal of sediments is that of methylation of mercury. Research of mercury in landfills shows that methylation is almost a certainty in these anaerobic environments. Our research has shown that there are no technologies available that can cost effectively capture emissions of methylmercury to the air from a landfill setting. It appears that the only option available for ensuring there are no airborne emissions is to keep the contaminated materials under water. How much water? Will the site be perpetually saturated? To what level? Will this impact G.P.'s ability to use the site for other purposes? If so will the property be permanently encumbered so that it can not be used for any purpose that may be incompatible with its primary use of a disposal facility for contaminated sediments? There is little information about these issues in the SEIS nor in the Supplemental Feasibility Study. Given that all of the details needed to make an informed decision are left to the remedial design phase, we must ask: how much does the Pilot team really know about this approach? Can the Pilot Team and GP guarantee that the community that surrounds this site will not be exposed to airborne methylmercury? Will there be monitoring done to ensure that the cap project is working and that there are no emissions?

Cornwall Avenue

- 6 The new disposal alternative will alter how the Cornwall Avenue landfill is remediated. There is scarcely any discussion of this aspect of the project in the SEIS or the feasibility study. The SEIS states that the landfill will be capped with 1-3 feet of clean material, but there is no discussion about how the shoreline will be armored so that the cap does not wear away under wave action. Nor does the SEIS discuss issues of groundwater infiltration or seepage discharges. There also seems to be an assumption that all seepages from this site will contain very low levels of contaminants. As the seep of pentachlorophenol in February 2000 showed us, discharges from this site are not predictable nor are they necessarily low level. From conversations with agency staff and from observing the response to that incident, it is evident that the agencies do not have a firm idea of exactly what may be buried at that site – a landfill that was never properly closed and remediated. Now, the only remediation proposed is a shoreline cap. All detail is again left for remedial design, which occurs after the decisions have been made and the public can no longer have meaningful input into the project.

Long-Term Site Use and Liability

- 7 As discussed above, we have questions about the long-term use of this site and the liability for the contaminants contained therein. We recognize that GP will have the long term liability to maintain this site, but ask whether this liability is complete or whether the public bears some liability for disposal at this site.

- 8 As well, as discussed above, we wonder whether the uplands that are created at the ASB site will be legally encumbered so that the site cannot be used for an incompatible purpose sometime in the future. Page 22 of the SEIS states that the ASB CDF would be designed to allow for future upland development of this site. Page 28 discussed the relative acceptable levels of mercury in upland soils and concludes that there would be no need for future restrictions. However, if the sediments must be kept saturated to avoid methylation, then future development may require piles for stability (certainly a traditional building foundation would not be feasible). Activities such as driving piles and other construction techniques may be incompatible with the primary use of this site as they may disturb the cap integrity and create pathways for contaminants to be released into the environment. It is probable that building on this site would be incompatible and that it should be managed simply as a disposal facility.

- 9 We are also curious about whether there are Shoreline Management Act considerations in siting this disposal facility. We recognize that the ASB is an existing facility, but this is a substantially different use than that for which it was originally constructed.

Public Access

I note that the presentation of public access under the various alternatives, also presented in Table 2, seems to change under the new preferred alternative. I wonder why there are no public access options under this alternative? Under the old Preferred Alternative, there was to be a gain in access, at Cornwall and the head of the Whatcom Waterway. Is Table 2 perhaps in error? On page 16, for example, the text states that habitat at the head of the waterway would be protected while accommodating public access. There does not appear, however, to be much discussion of public access provisions for the Cornwall site. Is the new alternative for this site incompatible with public access or was this simply overlooked in the preparation of this SEIS?

Marine Mammals

Page 38 of the SEIS states that cap designs would need to consider bioturbation/exposure by foraging whales that occasionally visit our bay. This statement seems to say that it is perfectly possible to engineer such a facility. I doubt that the Pilot Team nor their engineers have an understanding of how to design a cap to withstand disturbance by a bottom feeding whale. If this is a mistaken assumption, then the provision of references on cases where this has been successfully achieved should be included in the Final EIS.

Adequacy of the Remainder of the ASB

Has sufficient analysis been done to assure that the remaining 8 acres of the ASB will be adequate to treat the effluent coming from the mill, not only during construction, but over time? This question is especially appropriate given that this alternative proposes to decant contaminated water from the sediment dumped into the ASB as it settles.

Thank you for this opportunity to comment on these documents. We look forward to seeing some of the issues raised in this letter, and in other public comments, addressed in the final Environmental Impact Statement and Feasibility Study.

Sincerely,



Robyn J. du Pré
North Sound BayKeeper

Response to Robyn du Pré (North Sound Bay Keeper)

- 1) Comment noted. See response #1 (Williams). Although it appears that hydraulic dredging may be a desirable option because of the advantages you stated, as well as others, Ecology can not commit to its use until a full evaluation of this dredging option has been performed. This would be accomplished during the development of the **cleanup action plan**.
- 2) Comment noted. Also see response to comment 4 below.
- 3) Based on the Pilot Team's evaluation to date, it appears likely that an integrated sediment cleanup cap and intertidal habitat restoration corridor could be constructed in the nearshore area immediately adjacent to the ASB. However, if this alternative were selected, more detailed evaluation of the habitat potential will be required in order to maximize the overall habitat goals of the Pilot.
- 4) Many questions can only be answered during the design development and detailed engineering phase of the project. More certainty with respect to specific design details, protectiveness, and implementability of the selected remedy will be obtained during the development of the **cleanup action plan** and, later, the **engineering design report**. Both of these documents will be made available for public review and comment. It is neither appropriate nor cost effective to bring every alternative forward in order to provide the detailed level of design and engineering evaluation being sought by the commenter. The alternatives selection process is used to screen alternatives based upon likelihood of success in meeting all of the objectives of the Pilot within the bounds of practicality. Some outstanding questions remain within each alternative. However, selection of a preferred alternative will be based on Ecology's confidence in the desired outcome, recognizing that the present uncertainty surrounding certain aspects of the alternatives will need to be addressed during the design phase to ensure the success of the remedy. Ecology will only approve of a final remedial design that has been determined through detailed evaluations to be protective.
- 5) It is the goal of the ASB alternative to engineer the disposal facility in such a manner as to maintain an anoxic environment with the inclusion of marine waters. The specifics of this will be addressed in the **cleanup action plan** and **engineering design report**. In addition, the anticipated proposal would include monitoring of air emissions with associated action plans for reducing any mercury emissions should exceedences occur either short- or long-term. These could include both physical and chemical barriers to reduce or prevent mercury emissions. See also response #1 (Hanners) and response #7 (Johnson and Tolchin).

The upland site use of the property will be dependant on a number of factors, including a range of geological, environmental and political issues. It is not anticipated, however, that mercury vapor concentrations will restrict GPs industrial use of this property, as allowed under current zoning and other regulations.

- 6) The remedial alternative for Cornwall Ave. Landfill has not yet been determined. Upland groundwater flows resulting in sediment seeps are currently being monitored for degree and extent of contamination. Remedial alternatives for these sources are currently being investigated. Once upland source control has been fully realized, based upon current sediment information, capping to approximately 1-3 feet appears to be the most viable alternative, but sediment cleanup will not be undertaken until recontamination potential has been addressed. If a cap is the sediment alternative chosen, cap stability will be addressed. Cap stability is primarily a geotechnical engineering design issue; however, if cap stability is determined to not be achievable at the 30 percent design phase, another viable alternative can be chosen, from those remaining. It should be noted that cap stability/armoring has been accomplished at other sites and have most often included habitat enhancement components. This would be the goal at the Cornwall site as well if capping is selected.
- 7) This question is beyond the scope of the SEIS or RI/FS. The legal interpretation of liability should be addressed with the State Attorney General's Office. However, the employment of restrictive covenants and/or institutional controls will be evaluated. It should also be noted when discussing site use issues that the property is owned by Georgia-Pacific Corporation. Also see response # 3 and 5 (Johnson and Tolchin).
- 8) If saturation of the lower contaminated layers of the ASB is deemed necessary to prevent methylation of mercury, the presumption that the stability of the upland portion of the ASB will be compromised is speculative. Soil/sediment concentrations to be confined within the ASB under this alternative would be below MTCA direct soil contact criteria for unrestricted land uses. The upland uses will also not necessarily require construction necessitating the use of pilings. Even if pilings are determined necessary for construction stabilization, it is estimated that very low if any human health risk would exist from pile placement, even to those working directly at the site. Monitoring would be initiated to verify these assumptions.
- 9) The existing Bellingham Shoreline Master Program (BSMP) designates the ASB shoreline as "Urban Maritime Environment." This limits the type of development to those uses that require proximity to navigable waters, i.e. water-dependent, water-related. A distinction is made in the BSMP between "upland" and "over-water" uses. In this instance, the ASB is

considered to be upland as it was legally converted to a landlocked lagoon or pond and is not a "shoreline of the state." Utilizing the ASB as a disposal facility is therefore in accordance with the SMP.

- 10) As discussed in Section 3.3 of the Draft Supplemental EIS, potential impacts and opportunities for public access would be the same under the preferred and modified preferred alternatives. There are also additional opportunities for public access in the ASB area that would be explored during remedial design, should this alternative be selected. Also, as discussed above, the Whatcom Waterway documents do not explicitly address the Cornwall Avenue Landfill Site, and a remedial alternative for this site has not been selected by Ecology.
- 11) Comment noted.
- 12) This issue is being evaluated. Currently, however, based upon flow volumes and anticipated concentration, the remaining area is expected to be more than sufficient for treatment of the remaining effluent both during the dewatering process and the normal mill process water. The details of this will become more certain as additional data is collected on sediment leachability as well as engineering and design of the facility.



PORT OF BELLINGHAM
Washington State

April 24, 2002

Lucy McInerney, Site Manager
Department of Ecology
Northwest Regional Office
3190 - 160th Avenue S.E.
Bellevue, Washington 98008

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RE: Draft Supplemental Feasibility Study for the Whatcom Waterway Site
Draft Supplemental EIS for Bellingham Bay

Dear Ms. McInerney:

The Port of Bellingham is pleased to comment on the proposed substitution of the "Georgia Pacific Lagoon" as the preferred alternative for sediment disposal in Bellingham Bay. From the onset of this unique pilot program for urban embayment cleanups, the participating parties have worked to develop a comprehensive strategy that took numerous factors into consideration. Those factors included the disposition of contaminated sediments, sources of pollution, habitat restoration, and inwater and shoreline land use from a bay-wide perspective. It is within the context of considering a comprehensive strategy which functions to accommodate these considerations that the following comments are made.

Specifically, the baywide pilot goals regarding social and cultural uses, resource management, and economic vitality require an understanding of the long term use of proposed solutions. The current preferred alternative (a confined aquatic disposal as described in the October 2000 FEIS) has been evaluated with these and the other pilot goals in mind. It was selected because it best met these goals.

1 It is difficult to assess the viability of the substitute disposal site as proposed without the benefit of clearly understanding the long term use of the lagoon after it is filled. Because of the unique nature of the lagoon facility, there are alternate marine (water dependent) uses for that structure, such as a small boat marina, that need to be taken into account in the context of the long term strategy for the bay, including site cleanup, habitat, and community shoreline land use. Without this clear understanding of the long term use of the filled property, it is also unclear whether or not the fill would meet the local shoreline requirements for a water dependent use for the "created property." Additionally, there needs to be

Lucy McInerney, Site Manager
Department of Ecology
April 24, 2002
Page 2

- 2 a review of habitat recommendations in and around the Bellingham Shipping Terminal, Cornwall site, Georgia-Pacific Lagoon, and the I & J Waterway to ensure those habitat recommendations are compatible with future land use.

The October 2000 preferred alternative was to be implemented because of beneficial improvements to publicly controlled property and its use as the "cleanup site" for Bellingham Bay. This was memorialized in an agreement among the potentially liable parties. It appears the substitute disposal site will be largely in the control of a private party. At this point, it is unclear as to how the public PLPs (i.e., Port, City, DNR) and the community would benefit from its creation in terms of access, disposal cost, and future land use.

- 3 The long term proposed use of the proposed sediment disposal site after it is filled, the absence of an understanding of the care and custody of the site, and the subsequent access to it by PLPs cleaning up other sites throughout Bellingham Bay are of critical concern to the local community. In the interest of the cooperative partnership between Ecology and the local community that has been so rewarding under the Pilot, we ask that you not make a decision on
4 abandoning the preferred alternative until these issues are further resolved. We certainly appreciate the need to get on with the cleanup; however, these are critical issues.

We thank you for your consideration in this matter and look forward to further discussions.

Sincerely,



James S. Darling
Executive Director

cc: Commissioner Doug Sutherland (DNR)
Honorable Mayor Mark Asmundson (City of Bellingham)
Jim Cunningham (General Manager, Georgia-Pacific West)

Response to Mr. James Darling (Executive Director; Port of Bellingham)

- 1) Comment noted. Local shoreline requirement issues will be addressed prior to selection of the final alternative.
- 2) Comment noted.
- 3) Comment noted (land use) See response # 3, Johnson and Tolchin. It should also be noted that the ASB property is owned by Georgia-Pacific.
- 4) Comment noted.

McInerney, Lucy

From: Stefan Freelan [Stefan.Freelan@wwu.edu]
Sent: Thursday, April 18, 2002 5:06 PM
To: McInerney, Lucy
Subject: BBDDP data comments

I have had the opportunity over the last few weeks to review much of the data and reports associated with the Bellingham Bay Demonstration Project (GIS/CAD files from Anchor, as well as the FEIS, the Supp. EIS, the Supp. Feasibility Study, and the Final Data Compilation and Analysis). My specialty is not in water or sediment quality, but in GIS. As such I am writing to comment on the data compilation and generation aspects of the project.

1 Having obtained copies of much of both the original data (as compiled by Anchor Environmental) and the resulting Anchor-generated files, what is most striking to me is that there appears to be a dramatic information-loss in the process. What seems to have occurred is that Anchor compiled a large amount of GIS data from a number of GIS agencies, processed this data into a common CAD format, and returned CAD files. One of the primary differences between GIS and CAD data is the lack of attributes associated with the CAD files.

For an example, the SED-QUAL data, which began as an Access Point database file, is easily brought into a GIS, complete with sample date, chemical name, concentration, etc (in short a full database, complete with spatial location). The CAD sample file returned by Anchor includes but one or two attributes (mainly location and sample site) - with absolutely no date/chemical/quantity data at all.

2 Or for example, the maps of Pandalid Shrimp in the Final Data Compilation and Analysis, refer to densities of < 500, 500-1000, or > 1000 (or for Crab < 50, 50-100 and > 100). The data layers likewise contain these same categories. What is missing is the density units: 500 shrimp per what? Square mile? Hectare? Surely this information was know at some point, but in looking at the maps, the accompanying narrative, the data or the metadata I was unable to determine the units involved. Again, what I see is a gathering of data for a specific purpose, with a subsequent loss of the data for future uses.

I realize that Anchor is an engineering firm and choose to use CAD as their primary software for spatial analysis. I am also aware that in many aspect a CAD program is superior to a GIS in terms of the types of area and volumetric calculations that such a project requires. None-the-less, the data started out with considerable attribute information attached, and came back as little more than pretty pictures. I believe it goes without saying that since the data came from agencies using GIS, they would be more able to make use of data similarly returned in a GIS format.

The implication for future analysis is that much of Anchor's work will have to be redone, should we ever wish to revisit these issues in the future. As a taxpayer I feel that public has not been well represented in terms of data integrity for long-term analysis. If Anchor absolutely requires data in a CAD format, fine, but the final files (and related metadata) should then include the full original GIS data as well as the CAD files used to perform both analysis and graphics creation.

I am not questioning the actual analysis performed by Anchor (in fact, I have found very little discussion on their analysis at all, so it would be difficult to question even were I qualified to do so), but I feel strongly that such projects should be contracted and performed in such a manner as to further not just the immediate need for report graphics, but the longer term, ongoing needs of resource managers and monitors.

3 I was also disappointed in the amount and quality (or lack there-of) of Metadata that appears to have been provided. Again, from the standpoint of third-party review as well as ongoing research, not having detailed metadata on both the data layers created by Anchor and those compiled (preferably in their pre-CAD data-rich format) will needlessly handicap future analysis.

My hope is that while the data and project is still on the desks and minds of Anchor and

the rest of the agencies involved, that some of these apparent shortcomings of the final data might be rectified so that the investment in time and money made to date might be better preserved for the future.

thank you for your time,

Stefan Freelan
GIS Specialist
Dept. of Environmental Studies
Huxley College, Western Washington University
stefan@cc.wwu.edu
360-650-2949

Response to Mr. Stefan Freelan.

- 1) There has been some screening of data during the data evaluation and analysis process. Much of the decision-making concerning this data reduction step was performed based upon preliminary analysis of data, the purpose of which was to identify which chemicals were driving threats to human health and the environment. This was performed in order to clearly identify those contaminants and their locations that would be further investigated for potential cleanup. The Sed-Qual database is the official repository for sediment data collected in Washington state and is independently reviewed for appropriateness of application by Ecology. Although it may appear that data were “lost” through this process, certain analytical steps are transparent to the end-user, but are nonetheless accurate in their presentation in the final map coverages.
- 2) The Pandalid Shrimp density data units should read in units of numbers of shrimp per hectare, which was inadvertently left off in the Data Compilation Report and associated GIS layers. These data were presented to provide a general description of relative differences in abundance within the Bay, which may help inform decision-making in the Bay.
- 3) Most if not all of the sediment contaminant data utilized by Anchor is contained in the SED-QUAL database or will be available when submitted. Other data can or will be made available in non-CAD format for GIS interpretation. All raw data was not included to provide report efficiency and conciseness. Should public data sets be desired for additional independent analysis, every effort will be made to honor these requests.